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## NOAA tracks plume across Atlantic ocean


### Up to 90 local scientists involved in air-quality study

By Todd Neff, Camera Staff Writer  
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What organizers call the largest international air-quality study ever is under way in New England and off its coast, and dozens of Boulder scientists are playing a big role.

The study, led by the Boulder-based National Oceanic and Atmospheric Administration, started in early July and ends later this month. The effort is actually two major studies involving hundreds of scientists and a formidable collection of hardware.

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The New England Air Quality Study is a regional look at air quality that also explores its link to climate. A complementary international campaign seeks to understand sources of pollution on the East Coast and track it across the Atlantic to Europe.

The studies are part of a \$9 million, five-year effort to improve air-quality modeling and forecasting, as well as to understand how various types of air pollution affect temperatures.

The international project, called the International Consortium for Atmospheric Research on Transport and Transformation, involves six federal agencies and three European agencies, 25 universities and research institutes, three satellites, 12 planes, a network of ground-based stations and the 274-foot NOAA research ship Ronald H. Brown.

"It's a pretty daunting effort," said Jim Meagher of NOAA's Aeronomy Laboratory in Boulder, who is helping manage the study.

In a phone interview from the project office in Portsmouth, N.H., Meagher estimated that between 80 and 90 Boulder scientists were involved, representing NOAA, the University of Colorado and the National Center for Atmospheric Research.

Local NOAA scientists are doing mission planning and taking measurements from instruments on aircraft and on the research ship, Meagher said. The planning effort includes measuring wind speed and direction and using software models to help understand where aircraft and ships should fly, he said.

NOAA's Aeronomy Lab also is using an instrument — called a ring-down laser spectrometer — that detects nitrogen trioxide and nitrogen pentoxide, compounds that exist only at night. They contribute to the creation of low-level ozone that may cause health problems, and their impact on ozone creation has not been well and a German plane taking off from France followed it into Europe.

Meagher said it's the first time scientists have been able to track a plume across the Atlantic and capture its shape and composition in such high detail.

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"It really is groundbreaking," he said.

Frank Flocke, a Boulder NCAR atmospheric chemist, is among the scientists running experiments in New Hampshire. He and his team are monitoring a gas called peroxyacetyl nitrate, or PAN, with equipment crammed into a NOAA research plane holding dozens of scientific instruments.

PAN is a volatile organic compound produced along with low-level ozone that may cause health problems. By watching PAN levels and other organic compounds, Flocke said, his team can understand the origins of a given ozone plume.

Ozone-creating hydrocarbons come from tailpipes and smokestacks. But forests also release hydrocarbons, which combine with man-made nitrogen oxides to create ozone. Like beer sales at a ballgame, PAN and other trace gases may offer clues to the nature of the mass.

Flocke said the origins are important for policy-making.

"You can't do anything about hydrocarbons coming from trees," he said. "If most of the hydrocarbons in a given region are coming from vegetation, we need to reduce nitrogen oxides."

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